



Design and Prototyping Exercise

SFWRENG 4HC3/6HC3
(Fall 2025)



Weight	12%
Due	November 28 th , 11:59PM
<u>Estimated</u> Completion Time	10–12 hours

Why Am I Doing This?

For this assignment, you will practice your interface design and prototyping skills as well as communicating your design decisions. You will also work closely with mobile platforms (probably the most popular device platform nowadays), understanding their design guidelines and interface constraints.

You will design and prototype an interface for one of the possible options listed below. The actual functionality of each system is very minimal – your primary goal is to design a usable interface and use prototyping tools you prefer to simply support navigation between screens and minimal functionality. Note that these requirements are intentionally written without regard to the specific UI design, but rather just the features and functionalities the system should support.

Assignment-level Intended Learning Objectives

- Practice the iterative design process
- Apply prototyping techniques given a set of design requirements
- Communicate your design decisions with user-centered design concepts

Related Course-level Intended Learning Objectives

1. Analyze interaction and interface design solutions from a critical perspective including fundamental design principles, human needs, and capabilities.
3. Develop user-focused requirements, task analysis, scenarios, and storyboards to visualize and plan user interactions with the interface.
4. Produce prototypes with appropriate fidelities and iterate on design solutions based on user feedback and testing

What Do I Need to Do?

Format Options	Interactive Prototype	Interactive application, Video Recording
	Design Document	Written Report, Blog Post, Presentation with Voice Over

You will design and create a medium-fidelity prototype for one of the following options. Each option includes a description, some basic scenarios, and a list of minimum tasks/functions. You will need to add at least **ONE** additional task/function to the list based on the option's description and scenario(s). Note that Option #3 is a little different and therefore has some additional documentation needs to fully understand your design process.

Your prototype should be **clean wireframes** (i.e., no sketches, clean structure and layout) **with a medium level of interactivity** (e.g., key controls that are relevant to the required functionalities should be operable). You can create the prototype with **your preferred tools or programming framework**. The target platform for all options is touchscreen-enabled **mobile devices**, which means your prototype must be operable on a mobile device. You can specify the screen dimension and other requirements for the device in your design document for running the prototype. You will need to submit a link to a live version of your interactive prototype, or downloadable interactive application for graders to run your prototype on a specified mobile device with clear instructions, or a video recording demonstrating your prototype (see more details in the later section of "How do I submit my work").

At minimum, you must include the following information in your **design document**:

- A summary of your user groups (their user characteristics), and their needs or challenges, relating to the requirements and functions in the prompt based on reasonable guesses (i.e., support with observations, personal experiences, or research, etc.).
- A table/diagram shows how each required functionality is mapped to different key interface screens.
- A list of key interface screens (labeled) with a short paragraph justifies your design. You can talk about your decisions on layout, structure, interaction, information, etc. Make sure you use concepts from the class (e.g., Norman's principles, Gestalt, identified user characteristics) in your justifications.

Option #1: Group Decision-Making App

Your stakeholders have asked you to design a mobile app that empowers users to make decisions as a group, whether it's planning a weekend trip with friends, selecting a project at work, or deciding on a family dinner menu. Your app should promote transparency and effective communication around decision making (e.g., all members' feedback should be visible to everyone, diverse ways of expressing their opinions toward an option, the final decision process is clear and transparent to all members). Consider the following tasks/functions:

- **Create a decision topic and add response options:** users can create a decision topic (e.g., destination for a weekend trip), and add some options that group members could choose for their response to the topic.
- **Share the topic with others for their input:** once a decision topic is created, users should be able to share it with other relevant people who need to be involved in the decision-making process. People that the decision topic creator has shared to can provide feedback on the topic and/or response options.

- **Discussion around the decisions:** users can discuss options and pros and cons when deciding what to do as a group (think about how users will interact within the app for these discussions).
- **Finalize decisions:** the app should support a process that helps the group reach a final decision (e.g., consensus or number of votes).

For additional tasks/functions, you could think about tasks associated with various types of decisions the app needs to support, notifications and alerts during the decision-making process, different scenarios that involve making a decision, strategies to support transparency and effective communication, or any other challenges that you see that could support group decision-making.

Option #2: Campus Study Place Review App

Your stakeholders have asked you to design a mobile app that allows students to discover, review, and share information about campus study places (think about it like a “*Yelp for Campus Study Places*”). The app should be informative (i.e., providing enough and useful information to students regarding finding study place) and catering to the diverse study needs and preferences of students. Consider the following tasks/functions:

- **Study place listings:** users can browse a list of study places on campus, including outdoor and indoor spaces (libraries, on campus cafes, etc.).
- **Store favorite and visited places:** users can store their favorite study place(s), and a list of places that they have visited from the app’s listings.
- **Search and filter places:** users can search for study places on campus based on location and factors that are relevant to them when looking up a study place (think about factors that people care about a study place such as noise, crowdedness, proximity to food, etc.).
- **Reviews and rating a place:** users can share their opinions and information about a study place.

For additional tasks/functions, you can think about notifications (when would users likely want to be notified about a certain study place?), adding a newly discovered place, community interaction, or recommendations (when to recommend a study place? What should the recommendation be based on?).

Option #3: Digital Family Stories (6HC3 students must select this option)

Family members who are distributed across time zones can easily miss opportunities in synchronous communication (such as videochat through FaceTime) for connections. A group of researchers developed a physical audio system with three devices for family members to share activities and experiences remotely. Your stakeholders have tasked you with designing a **mobile app alternative** for this physical audio system:

- **Translate functionalities to the mobile app:** read the research paper “FamilyStories: Asynchronous Audio Storytelling for Family Members Across Time Zones” by Heshmat et al. (especially the system section “FAMILYSTORIES”) to understand the necessary tasks/functions you must translate for a mobile version. You can find a PDF of this paper on Avenue in *Content > Individual Assignments > Design and Prototyping Exercise >*

Resources. You must include a list the tasks/functions and requirements that you have identified in the paper in your design document (in addition to the requirements below).

- **Add additional tasks/functions/improvements:** the researchers ran a five-week long study to evaluate their system and collected some useful feedback. Propose at least one additional functionality or an improvement to the existing one. Provide evidence from the paper to support your proposed tasks, functions, and/or improvements. You must include a description/explanation of your design rationale in your design document (in addition to the requirements below).

How Do I Submit my Work?

You will need to submit your work to the *Design and Prototyping Exercise* assignment folder on Avenue to Learn. If your assignment is in a:

- **Written format** (e.g., written report, blog post): you must submit your work as a PDF.
- **Audio/Visual format** (e.g., Video Recording, Presentation with Voice Over): you need to upload it to YouTube. You must submit a link to the YouTube video **and** a written transcript as a PDF so that viewers can follow along. *Auto-generated transcripts are welcome.* **If you are submitting a video for the prototype**, the recording must include a demonstration of all tasks/functions on your specified mobile device. You must make sure the design and detailed of the interface is captured in detail from the video (an example similar to [this video](#)¹, but with better lighting condition so interface details are more visible).
- **The Interactive Application** (e.g., live link, executable) for the prototype: you must provide a **link** to access/download and interact with it on your specified mobile device. If you are submitting an executable file (e.g., apk file for Android), make sure you also include some instructions for how to run the app for your grader.

There is no formal optional check-in for this assignment, but you are welcome to reach out if you would like some feedback on your design document and prototype. You can send over a link to your current prototype or screenshots of your interfaces with notes on specific aspects of your design that you want us to provide feedback on.

If you are having trouble submitting your work for any reason, reach out to me ASAP so that we can work towards a solution together.

How will I be assessed?

We will assess your:

- Interactive prototype for its functionality and features, its interactivities in the controls and widgets, its interactivities for demonstrating the task flows, its clarity in structure and content, and its sufficiency in information and content.

¹ <https://vimeo.com/120130568>

- Design document for its clarity in describing the additional functions/features, summarizing the interface designs relating to the required functions/features, and justifying your design decisions. For option #3, we will also assess your design document for its thoroughness in translating design requirements and findings from a research paper.

Evaluations are point-based. Your interactive prototype is out of 46 points; design document is out of 18 points for the first two options (option #1 and option #2), and out of 24 points for the third option (option #3). The total points for this assessment is 64 points if choosing option #1 or option #2, and 70 points if choosing option #3.

You can, and should, study the attached rubric to get a better feel for what we expect you to do. It's on pages 7–12.

Be Aware that doing exactly what Level 3 in the Rubric describes will get you a B-

Got Any Advice?

Before starting the design work:

- Make reasonable assumption for the primary stakeholder/user for your option. List key user characteristics, needs, challenges, and requirements. It might help to review what your team did for Design Project M1 and M2.
- You can also organize your user information in the format of a persona.
- Identify some additional requirements based on user needs you identified.
- Create a diagram to capture the key interactions, system interfaces, and information mapped from the required functionality (e.g. a storyboard).
- You are also encouraged to look up similar apps' design as part of the benchmarking process. Make sure you record this in your design document!

Sketch your design:

- Quickly sketch some ideas for your interface layout before you start prototyping.
- Focus on interactions, information, structures, and layout of the interfaces.
- Quickly go through your interfaces sketch for a walkthrough to spot potential problems in the design.
- Ask a friend for help! Show them a few of your ideas and ask for feedback. Make sure you credit them in your design document!

Create your design and prototype:

- Pick a prototyping tool/programming framework you prefer for creating your interactive prototype (something you already know, or you want to practice using). In general, for non-programming tool, we recommend considering Figma or Axure. For programming tool, we recommend plain HTML/CSS with JavaScript. These prototyping options should let you create a prototype that users can interact with on a mobile device.

- For your interface and wireframes, you can find existing wireframe libraries and templates with most design tools (e.g., Figma). You can go beyond the wireframe fidelity with your interface design (e.g., adding more color usage, graphics, icons), and we recommend following existing UI guidelines and framework, as a lot of visual/layout design details have already been considered. You do **not have to** start from scratch for this assignment! Feel free to explore afterwards. You can follow the [Material design library](#)², if you are designing for Android or want to program the prototype (the library should be available on GitHub).
- Most prototyping tools provide options for making your prototype live. If you are programming your prototype using web, the free [GitHub pages](#)³ that you can create from your repository should let you host your static web app. Let us know if you don't know how to create a live version of your prototype.

Document your design:

- Make sure you include all the important design decisions you make during your design and prototyping process!

What Other Work Will These Help Me Do?

The design and prototyping skills and experience from this assignment will help you do:

- Design Project Milestone 3: Design Sketches & Low-Fidelity Prototype
- Design Project Milestone 4: High-Fidelity Prototype & Project Report

² <https://m3.material.io/>

³ <https://pages.github.com/>

Design and Prototyping Exercise Rubric

		Level 4	Level 3	Level 2	Level 1
Medium-Fidelity Prototype—46 marks (1 of 2)	Features and Functionalities	10 marks All features and functionalities to perform the required and additional tasks/functions are clearly demonstrated in the prototype	8 marks Most features and functionalities to perform the required and additional tasks/functions are clearly demonstrated in the prototype	6 marks Some features and functionalities might be missing in the prototype, making it challenging to perform the required and additional tasks/functions	2 marks Most features and functionalities are missing in the prototype, making it impossible to perform the required and additional tasks/functions
	Interactivity: Task Flows	8 marks All interactions between key interface states (e.g., between the home page and the search page) are clearly demonstrated in the prototype to capture the tasks flows for the required and additional tasks/functions (e.g., from starting the search to viewing the search results)	6 marks Most interactions between key interface states are demonstrated in the prototype, with no challenges to complete the task flows for the required and additional tasks/functions	4 marks Some interactions between key interface states are missing (i.e., missing/broken links), making it challenging to complete some task flows for the required and additional tasks/functions	2 marks Most interactions between key interface states are missing in the prototype, making it impossible to complete most task flows for the required and additional tasks/functions
	Interactivity: Widgets and Controls	8 marks All interactions for secondary widgets and controls are clearly demonstrated in the prototype, through one (1) or more clickable/touchable example for each control group (e.g., one dropdown selection should be clickable/touchable in a filter with three dropdowns)	6 marks Most interactions for secondary widgets and controls are demonstrated in the prototype, through one (1) or more clickable/touchable example for each control group	4 marks Some interactions for secondary widgets and controls are demonstrated in the prototype through one (1) clickable/touchable example for each control group	2 marks Most interactions for secondary widgets and controls are missing in the prototype

Medium-Fidelity Prototype—46 marks (2 of 2)		10 marks	8 marks	6 marks	2 marks
Medium-Fidelity Prototype—46 marks (2 of 2)	Structure and Organization	All elements in the prototype are clearly defined and distinguishable; A clear hierarchy is demonstrated in all content in the prototype; Proper grouping of related elements is clearly demonstrated in the prototype; Adequate use of whitespace on the prototype to enhance overall clarity	Most elements in the prototype are clearly defined and distinguishable; A clear hierarchy is demonstrated in most content in the prototype; Proper grouping of related elements is demonstrated in the prototype	Most elements in the prototype are defined and distinguishable; Some content in the prototype might lack clear hierarchy	Elements in the prototype are somewhat defined, but lack clarity
	Information and Content	Provide sufficient information and content on the prototype to demonstrate the required and additional tasks/functions; All labels and text content on the prototype are clear and readable; Use user-centered languages in the labels and text content (i.e., no system jargons)	Provide information and content on the prototype to demonstrate the required and additional tasks/functions; Not all labels and text content on the prototype are clear and readable; Use mostly user-centered languages but have some jargons	A substantial amount of information and content is missing on the prototype, making it challenging to complete the required and additional tasks/functions; Some labels and text on the prototype lack clarity	Most information and content are missing on the prototype, making it impossible to complete the required and additional tasks/functions; Most labels and text on the prototype lack clarity

Design Document Rubric for Option #1 & Option #2

Design Document (Option#1&2)—18 marks (1 of 2)		4 marks	3 marks	2 marks	1 mark
Summary of User Characteristics and Needs		Clearly describe the user groups relevant to the prompt, including three (3) or more relevant user characteristics, and three (3) or more user needs or challenges; User needs or challenges are well supported by examples from either existing knowledge or personal experience	Describe the user groups relevant to the prompt, including three (3) or more relevant user characteristics, and three (3) or more user needs or challenges	Describe the user groups relevant to the prompt, including two (2) relevant user characteristics, and two (2) user needs or challenges	Describe the user group relevant to the prompt, including only one (1) user characteristics or only one (1) user needs or challenges
Additional Task/Function		2 marks Clearly describe one (1) or more additional tasks/functions, with strong connections to user needs/challenges	1.5 marks Describe one (1) additional task/function, with some connections to user needs/challenges	1 mark Describe one (1) additional task/function, with weak connections to user needs/challenges	0 mark No clear description of additional task/function

Design Document—18 marks (2 of 2)	Table/Diagram of All Functions	2 marks	1.5 marks	1 mark	0 mark
		Clearly show the mapping between all tasks/functions and key interface screens; Labels and tags for all tasks/functions and key interface screens are consistent throughout the design document	Show the mapping between all tasks/functions and key interface screens; Some labels and tags for tasks/functions and key interface screens might be inconsistent throughout the design document	Show the mapping between most tasks/functions and key interface screens	No table/diagram provided for the mapping between tasks/functions and key interface screens
Design Document—18 marks (2 of 2)	Design Justifications	10 marks	8 marks	6 marks	2 marks
		Provide clear design justifications for all key interface screens from the prototype, with relations to user needs/challenges and concepts from the class (e.g., Norman's principles, Gestalt)	Provide clear design justifications for all key interface screens from the prototype, with relations to user needs/challenges or concepts from the class	Provide design justifications for key interface screens from the prototype, but not relating to user needs/challenges or concepts from the class OR Miss design justifications for some key interface screens	Most design justifications for key interface screens from the prototype are missing

Design Document Rubric for Option #3

Design Document (Option#3)—24 marks (1 of 2)		4 marks	3 marks	2 marks	1 mark
	Summary of User Characteristics and Needs	Clearly describe the user groups relevant to the prompt, including three (3) or more relevant user characteristics, and three (3) or more user needs/challenges; User needs/challenges are well supported by examples from either existing knowledge or personal experience	Describe the user groups relevant to the prompt, including three (3) or more relevant user characteristics, and three (3) or more user needs/challenges	Describe the user groups relevant to the prompt, including two (2) relevant user characteristics, and two (2) user needs/challenges	Describe the user group relevant to the prompt, including only one (1) user characteristics or only one (1) user needs/challenges
	Translate Tasks/Functions	Clearly describe all tasks/functions translated to a mobile version of the system from the research paper	Clearly describe most tasks/functions translated to a mobile version of the system from the research paper	Some tasks/functions are missing for translating the design to a mobile version of the system	Most tasks/functions are missing for translating the design to a mobile version of the system
	Additional Task/Function/Improvement	Clearly describe one or more (1) additional tasks/functions/improvements, with strong connections to evidence from the research paper	Describe one (1) additional task/function/improvement, with some connections to evidence from the research paper	Describe one (1) additional task/function/improvement, with weak connections to evidence from the research paper	Describe one (1) additional task/function/improvement with no connections to the research paper

Design Document (Option#3)—24 marks (2 of 2)	Table/Diagram of All Functions	2 marks Clearly show the mapping between all tasks/functions and key interface screens; Labels and tags for all tasks/functions and key interface screens are consistent throughout the design document	1.5 marks Show the mapping between all tasks/functions and key interface screens; Some labels and tags for tasks/functions and key interface screens might be inconsistent throughout the design document	1 mark Show the mapping between most tasks/functions and key interface screens	0 mark No table/diagram provided for the mapping between tasks/functions and key interface screens
	Design Justifications	10 marks Provide clear design justifications for all key interface screens from the prototype, with relations to user needs/challenges and concepts from the class (e.g., Norman's principles, Gestalt)	8 marks Provide design justifications for all key interface screens from the prototype, with relations to user needs/challenges or concepts from the class	6 marks Provide design justifications for key interface screens from the prototype, but not relating to user needs/challenges or concepts from the class OR Miss design justifications for some key interface screens	2 marks Most design justifications for key interface screens from the prototype are missing